

Bibliography of Joseph Leonard Walsh

ARTICLES

1. Note on Cauchy's integral formula, *Ann. of Math.* **18** (1916), 79–80.
2. On the location of the roots of the Jacobian of two binary forms and of the derivative of a rational function, *Trans. Amer. Math. Soc.* **19** (1918), 291–298.
3. On the proof of Cauchy's integral formula by means of Green's formula, *Bull. Amer. Math. Soc.* **26** (1920), 155–157.
4. On the solution of linear equations in infinitely many variables by successive approximations, *Amer. J. Math.* **42** (1920), 91–96.
5. On the location of the roots of the derivative of a polynomial, *Ann. of Math.* **22** (1920), 128–144.
6. On the location of the roots of the derivative of a polynomial, *Comptes Rendus du Congrès international des Mathématiciens* (Strasbourg, 1920). Publiés par Henri Villat. Toulouse, Édouard Privat, 1921, 339–342.
7. On the location of the roots of the Jacobian of two binary forms and of the derivative of a rational function, *Trans. Amer. Math. Soc.* **22** (1921), 101–116.
8. A generalization of the Fourier cosine series, *Trans. Amer. Math. Soc.* **22** (1921), 230–239.
9. On the transformation of convex point sets, *Ann. of Math.* **22** (1921), 262–266.
10. Sur la position des racines des dérivées d'un polynôme. *C. R. Acad. Sci. Paris* **172** (1921), 662–664.
11. Solution to proposed problem by Nathan Altschillercourt, "Find the surfaces all the plane sections of which are circles." *Amer. Math. Monthly* **28** (1921), 480.
12. (With N. Wiener). The equivalence of expansions in terms of orthogonal functions, *J. Math. Phys.* **1** (1921), 103–122.
13. A theorem on cross-ratios in the geometry of inversion, *Ann. of Math.* **23** (1921), 45–51.
14. A theorem on loci connected with cross-ratios, *Rend. Cir. Mat. Palermo* **46** (1922), 236–248.
15. On the location of the roots of the derivative of a polynomial, *Proc. Nat. Acad. Sci. U.S.A.* **8** (1922), 139–141.
16. A certain two-dimensional locus, *Amer. Math. Monthly* **29** (1922), 112–114.
17. Some two-dimensional loci connected with cross ratios, *Trans. Amer. Math. Soc.* **23** (1922), 67–88.
18. A generalization of normal congruences of circles, *Bull. Amer. Math. Soc.* **28** (1922), 456–462.
19. On the convergence of the Sturm–Liouville series, *Ann. of Math.* **24** (1922), 109–120.
20. On the location of the roots of certain types of polynomials, *Trans. Amer. Math. Soc.* **24** (1922), 163–180.
21. On the location of the roots of the Jacobian of two binary forms and of the derivative of a rational function, *Trans. Amer. Math. Soc.* **24** (1922), 31–69.
22. Sur un théorème d'algèbre, *C. R. Acad. Sci. Paris* **176** (1923), 1361–1364.
23. A closed set of normal orthogonal functions, *Amer. J. Math.* **45** (1923), 5–24.
24. A property of Haar's system of orthogonal functions, *Math. Ann.* **90** (1923), 38–45.

25. Sur la détermination d'une fonction analytique par ses valeurs sur un contour, *C. R. Acad. Sci. Paris* **178** (1924), 58–60.
26. On the location of the roots of polynomials, *Bull. Amer. Math. Soc.* **30** (1924), 51–62.
27. Some two-dimensional loci, *Quart. J. Pure Appl. Math.* **1** (1924), 154–165.
28. On the expansion of analytic functions in series of polynomials, *Trans. Amer. Math. Soc.* **26** (1924), 155–170.
29. On the location of the roots of Lamé's polynomials, *Tôhoku Math. J.* **23** (1924), 312–317.
30. A generalization of evolutes, *Rend. Cir. Math. Palermo* **48** (1924), 23–27.
31. (Book review). The Strasbourg congress, *Bull. Amer. Math. Soc.* **30** (1924), 461–464.
32. An inequality for the roots of an algebraic equation, *Ann. of Math.* **25** (1924), 285–286.
33. On Pellet's theorem concerning the roots of a polynomial, *Ann. of Math.* **26** (1924), 59–64.
34. Sur la position des racines des fonctions entières de genre zero et un, *C. R. Acad. Sci. Paris* **180** (1925), 2009–2011.
35. Note on the location of the roots of a polynomial, *Math. Z.* **24** (1926), 733–742.
36. Über die Entwicklung einer analytischen Funktion nach Polynomen, *Math. Ann.* **96** (1926), 430–436.
37. Über die Entwicklung einer Funktion einer komplexen Veränderlichen nach Polynomen, *Math. Ann.* **96** (1926), 437–450.
38. Über den Grad der Approximation einer analytischen Funktion, *Sitzungsberichte Bayerischen Akad. Wiss.* (1926), 223–229.
39. A paradox resulting from integration by parts, *Amer. Math. Monthly* **34** (1927), 88.
40. On the expansion of harmonic functions in terms of harmonic polynomials, *Proc. Nat. Acad. Sci. U.S.A.* **13** (1927), 175–180.
41. On the degree of approximation to a harmonic function, *Bull. Amer. Math. Soc.* **33** (1927), 591–598.
42. On the expansion of analytic functions in series of polynomials and in series of other analytic functions, *Trans. Amer. Math. Soc.* **30** (1928), 307–332.
43. (Book review). The logarithmic potential. By G. C. Evans. *Amer. Math. Monthly* **35** (1928), 254–257.
44. On approximation to an arbitrary function of a complex variable by polynomials *Trans. Amer. Math. Soc.* **30** (1928), 472–482.
45. Über die Entwicklung einer harmonischen Funktion nach harmonischen Polynomen, *J. Reine Angewandte Math.* **159** (1928), 197–209.
46. On the degree of approximation to an analytic function by means of rational functions, *Trans. Amer. Math. Soc.* **30** (1928), 838–847.
47. Note on the expansion of analytic functions in series of polynomials and in series of other analytic functions, *Trans. Amer. Math. Soc.* **31** (1929), 53–57.
48. The approximation of harmonic functions by harmonic polynomials and by harmonic rational functions, *Bull. Amer. Math. Soc.* **35** (1929), 499–544.
49. On approximation by rational functions to an arbitrary function of a complex variable, *Trans. Amer. Math. Soc.* **31** (1929), 477–502.
50. Boundary values of an analytic function and the Tchebycheff method of approximation, *Proc. Nat. Acad. Sci. U.S.A.* **15** (1929), 799–802.
51. On the overconvergence of sequences of polynomials of best approximation, *Proc. Nat. Acad. Sci. U.S.A.* **16** (1930), 297.
52. Boundary values of an analytic function and the Tchebycheff method of approximation, *Trans. Amer. Math. Soc.* **32** (1930), 335–390.

53. On the overconvergence of sequences of polynomials of best approximation, *Trans. Amer. Math. Soc.* **32** (1930), 794–816.
54. Note on the overconvergence of sequences of polynomials of best approximation, *Trans. Amer. Math. Soc.* **33** (1931), 370–388.
55. The existence of rational functions of best approximation, *Trans. Amer. Math. Soc.* **33** (1931), 668–689.
56. On the overconvergence of certain sequences of rational functions of best approximation, *Acta Math.* **57** (1931), 411–435.
57. On interpolation and approximation by rational functions with preassigned poles, *Trans. Amer. Math. Soc.* **34** (1932), 22–74.
58. An expansion of meromorphic functions, *Proc. Nat. Acad. Sci. U.S.A.* **18** (1932), 165–171.
59. On polynomial interpolation to analytic functions with singularities, *Bull. Amer. Math. Soc.* **38** (1932), 289–294.
60. On the overconvergence of sequences of rational functions, *Amer. J. Math.* **54** (1932), 559–570.
61. On interpolation to harmonic functions by harmonic polynomials, *Proc. Nat. Acad. Sci. U.S.A.* **18** (1932), 514–517.
62. Interpolation and functions analytic interior to the unit circle, *Trans. Amer. Math. Soc.* **34** (1932), 523–556.
63. Bateman on mathematical physics, *Bull. Amer. Math. Soc.* **39** (1933), 178–180. (Review).
64. Interpolation and an analogue of the Laurent development, *Proc. Nat. Acad. Sci. U.S.A.* **19** (1933), 203–207.
65. The Cauchy–Goursat theorem for rectifiable Jordan curves, *Proc. Nat. Acad. Sci. U.S.A.* **19** (1933), 540–541.
66. An extremal problem in analytic functions, *Proc. Nat. Acad. Sci. U.S.A.* **19** (1933), 900–902.
67. Note on polynomial interpolation to analytic functions, *Proc. Nat. Acad. Sci. U.S.A.* **19** (1933), 959–963.
68. Note on the location of the critical points of Green’s function, *Bull. Amer. Math. Soc.* **39** (1933), 775–782.
69. A duality in interpolation to analytic functions by rational functions, *Proc. Nat. Acad. Sci. U.S.A.* **19** (1933), 1049–1053.
70. On series of interpolation and the degree of convergence of sequences of analytic functions, *Tôhoku Math. J.* **38** (1933), 375–389.
71. Note on the location of the roots of the derivative of a polynomial, *Mathematica (Cluj)* **8** (1933), 185–190.
72. (With Helen G. Russell). On the convergence and overconvergence of sequences of polynomials of best simultaneous approximation to several functions analytic in distinct regions, *Trans. Amer. Math. Soc.* **36** (1934), 13–28.
73. On approximation to an analytic function by rational functions of best approximation, *Math. Z.* **38** (1934), 163–176.
74. Note on the orthogonality of Tchebycheff polynomials on confocal ellipses, *Bull. Amer. Math. Soc.* **40** (1934), 84–88.
75. Some interpolation series, *Amer. Math. Monthly* **41** (1934), 300–308.
76. Sur l’interpolation par fonctions rationnelles, *C. R. Acad. Sci. Paris* **198** (1934), 1377–1378.
77. Note on the location of the critical points of harmonic functions, *Proc. Nat. Acad. Sci. U.S.A.* **20** (1934), 551–554.

78. Lemniscates and equipotential curves of Green's function, *Amer. Math. Monthly* **42** (1935), 1–17.
79. A necessary condition for approximation by rational functions, *Bull. Amer. Math. Soc.* **42** (1936), 219–221.
80. The divergence of sequences of polynomials interpolating in roots of unity, *Bull. Amer. Math. Soc.* **42** (1936), 715–719.
81. Note on the behavior of a polynomial at infinity, *Amer. Math. Monthly* **43** (1936), 461–464.
82. A mean-value theorem for polynomials and harmonic polynomials, *Bull. Amer. Math. Soc.* **42** (1936), 923–930.
83. Note on the curvature of level curves of Green's function, *Proc. Nat. Acad. Sci. U.S.A.* **23** (1937), 84–89.
84. (With W. E. Sewell). Note on degree of approximation to an integral by Riemann sums, *Amer. Math. Monthly* **44** (1937), 155–160.
85. Note on the curvature of orthogonal trajectories of level curves of Green's function, *Proc. Nat. Acad. Sci. U.S.A.* **23** (1937), 166–169.
86. On the shape of level curves of Green's function, *Amer. Math. Monthly* **44** (1937), 202–213.
87. Maximal convergence of sequences of harmonic polynomials, *Ann. of Math.* **38** (1937), 321–354.
88. (With G. M. Merriman). Note on the simultaneous orthogonality of harmonic polynomials on several curves, *Duke Math. J.* **3** (1937), 279–288.
89. (With W. E. Sewell). Note on the relation between continuity and degree of polynomial approximation in the complex domain, *Bull. Amer. Math. Soc.* **43** (1937), 557–563.
90. Note on the curvature of orthogonal trajectories of level curves of Green's functions, *Bull. Amer. Math. Soc.* **44** (1938), 520–523.
91. (With W. Seidel). On the derivatives of functions analytic in the unit circle, *Proc. Nat. Acad. Sci. U.S.A.* **24** (1938), 337–340.
92. On interpolation and approximation by functions analytic and bounded in a given region, *Proc. Nat. Acad. Sci. U.S.A.* **24** (1938), 477–486.
93. (With W. E. Sewell). Note on degree of trigonometric and polynomial approximation to an analytic function, *Bull. Amer. Math. Soc.* **44** (1938), 865–873.
94. (Book review). "Convergence," by W. L. Ferrar, *Science* **89** (1939), 59–60.
95. Note on the location of zeros of the derivative of a rational function whose zeros and poles are symmetric in a circle, *Bull. Amer. Math. Soc.* **45** (1939), 462–470.
96. On interpolation by functions analytic and bounded in a given region, *Trans. Amer. Math. Soc.* **46** (1939), 46–65.
97. On the circles of curvature of the images of circles under a conformal map, *Amer. Math. Monthly* **46** (1939), 472–485.
98. Note on the curvature of orthogonal trajectories of level curves of Green's function. III, *Bull. Amer. Math. Soc.* **46** (1940), 101–108.
99. On the degree of convergence of sequences of rational functions, *Trans. Amer. Math. Soc.* **47** (1940), 254–292.
100. Note on the degree of convergence of sequences of analytic functions, *Trans. Amer. Math. Soc.* **47** (1940), 293–304.
101. (With W. E. Sewell). Note on degree of trigonometric and polynomial approximation to an analytic function, in the sense of least p th powers, *Bull. Amer. Math. Soc.* **46** (1940), 312–319.
102. (With W. E. Sewell). Sufficient conditions for various degrees of approximation by polynomials, *Duke Math. J.* **6** (1940), 658–706.

103. (Book Review). "Sur les Valeurs Exceptionnelles des Fonctions Méromorphes et de Leurs Dérivées". By Georges Valiron. (Actualités Scientifiques et Industrielles, no. 570.) Hermann, Paris, 1937. *Bull. Amer. Math. Soc.* **47** (1941), 7-8.
104. (With W. E. Sewell). On the degree of polynomial approximation to analytic functions: Problem β , *Trans. Amer. Math. Soc.* **49** (1941), 229-257.
105. (With W. Seidel). On approximation by euclidean and non-euclidean translations of an analytic function, *Bull. Amer. Math. Soc.* **47** (1941), 916-920.
106. Note on the coefficients of overconvergent power series, *Bull. Amer. Math. Soc.* **48** (1942), 163-166.
107. (With W. Seidel). On the derivatives of functions analytic in the unit circle and their radii of univalence and of p -valence, *Trans. Amer. Math. Soc.* **52** (1942), 128-216.
108. Local civil time and date from time diagram, *Proc. U.S. Naval Institute* **69** (Whole No. 479) (1943), 23-24.
109. A new diagram for a universal small-area plotting sheet, *Proc. U.S. Naval Institute* **69** (Whole No. 487) (1943), 1221-1222.
110. (With E. N. Nilson). Interpolation and approximation by functions analytic and bounded in a given region, *Trans. Amer. Math. Soc.* **55** (1944), 53-67.
111. The running fix as used at sea. (Some navigational wrinkles on "Pilot Chart of the North Atlantic Ocean," No. 1400. Hydrographic Office, Washington, DC, 1946.)
112. Note on the location of the critical points of harmonic functions, *Bull. Amer. Math. Soc.* **52** (1946), 346-347.
113. Overconvergence, degree of convergence and zeros of sequences of analytic functions, *Duke Math. J.* **13** (1946), 195-234.
114. On degree of approximation on a Jordan curve to a function analytic interior to the curve by functions not necessarily analytic interior to the curve, *Bull. Amer. Math. Soc.* **52** (1946), 449-453.
115. Taylor's series and approximation to analytic functions, *Bull. Amer. Math. Soc.* **52** (1946), 572-579.
116. (Book review). "Table of arc $\sin x$ " and "Tables of Associated Legendre Functions," by Lyman J. Briggs, *et al.*, *Science* **104** (1946), 41.
117. Note on the location of the zeros of the derivative of a rational function having prescribed symmetry, *Proc. Nat. Acad. Sci. U.S.A.* **32** (1946), 235-237.
118. A rigorous treatment of the first maximum problem in the calculus, *Amer. Math. Monthly* **54** (1947), 35-36.
119. On the location of the critical points of harmonic measure, *Proc. Nat. Acad. Sci. U.S.A.* **33** (1947), 18-20.
120. (With E. N. Nilson). Note on the degree of convergence of sequences of polynomials, *Bull. Amer. Math. Soc.* **53** (1947), 116-117.
121. Note on the derivatives of functions analytic in the unit circle, *Bull. Amer. Math. Soc.* **53** (1947), 515-523.
122. Note on the critical points of harmonic functions, *Proc. Nat. Acad. Sci. U.S.A.* **33** (1947), 54-59.
123. The location of the critical points of simply and doubly periodic functions, *Duke Math. J.* **14** (1947), 575-586.
124. On the critical points of functions possessing central symmetry on the sphere, *Amer. J. Math.* **70** (1948), 11-21.
125. Note on the location of the critical points of harmonic functions, *Bull. Amer. Math. Soc.* **54** (1948), 191-195.
126. The critical points of linear combinations of harmonic functions, *Bull. Amer. Math. Soc.* **54** (1948), 196-205.

127. Critical points of harmonic functions as positions of equilibrium in a field of force, *Proc. Nat. Acad. Sci. U.S.A.* **34** (1948), 111–119.
128. Methods of symmetry and critical points of harmonic functions, *Proc. Nat. Acad. Sci. U.S.A.* **34** (1948), 267–271.
129. On the location of the zeros of the derivatives of a polynomial symmetric in the origin, *Bull. Amer. Math. Soc.* **54** (1948), 942–945.
130. (With W. E. Sewell and H. M. Elliott). On the degree of convergence of harmonic polynomials to harmonic functions, *Proc. Nat. Acad. Sci. U.S.A.* **35** (1949), 59–62.
131. (With E. N. Nilson). On functions analytic in a region: Approximation in the sense of least p th powers, *Trans. Amer. Math. Soc.* **65** (1949), 239–258.
132. (With A. S. Galbraith and W. Seidel). On the growth of derivatives of functions omitting two values, *Trans. Amer. Math. Soc.* **67** (1949), 320–326.
133. (With W. E. Sewell and H. M. Elliott). On the degree of polynomial approximation to harmonic and analytic functions, *Trans. Amer. Math. Soc.* **67** (1949), 381–420.
134. (With W. E. Sewell). On interpolation to an analytic function in equidistant points: Problem β , *Bull. Amer. Math. Soc.* **55** (1949), 1177–1180.
135. On distortion at the boundary of a conformal map, *Proc. Nat. Acad. Sci. U.S.A.* **36** (1950), 152–156.
136. (With H. Margaret Elliott). Polynomial approximation to harmonic and analytic functions: generalized continuity conditions, *Trans. Amer. Math. Soc.* **68** (1950), 183–203.
137. The location of critical points of harmonic functions, Leopoldo Fejér et Frederico Riesz LXX Annos Natis Dedicatus, Pars B. *Acta Sci. Math. Szeged* **12** (1950), 61–65.
138. (With H. G. Russell). On simultaneous interpolation and approximation by functions analytic in a given region, *Trans. Amer. Math. Soc.* **69** (1950), 416–439.
139. On Rouché's theorem and the integral-square measure of approximation, *Proc. Amer. Math. Soc.* **2** (1951), 671–681.
140. Note on the location of the critical points of a real rational function, *Proc. Amer. Math. Soc.* **2** (1951), 682–685.
141. Note on approximation by bounded analytic functions, *Proc. Nat. Acad. Sci. U.S.A.* **37** (1951), 821–826.
142. On Rouché's theorem and the integral-square measure of approximation, *Proc. Inter. Congress Math.* **1**, American Mathematical Society, Providence, RI, 1952, 405–406.
143. (With E. N. Nilson). Note on overconvergence in sequences of analytic functions, *Proc. Amer. Math. Soc.* **3** (1952), 442–443.
144. Polynomial expansions of functions defined by Cauchy's integral, *J. Math. Pures Appl.* (9) **31** (1952), 221–244.
145. Note on the location of zeros of extremal polynomials in the non-Euclidean plane, *Extrait Publ. Institut Math. Acad. Serbe Sci.* **4** (1952), 157–160.
146. (With Philip Davis). Interpolation and orthonormal systems, *J. Analyse Math.* **2** (1952), 1–28.
147. Degree of approximation to functions on a Jordan curve, *Trans. Amer. Math. Soc.* **73** (1952), 447–458.
148. (With H. Margaret Elliott). Degree of approximation on a Jordan curve, *Proc. Nat. Acad. Sci. U.S.A.* **38** (1952), 1058–1066.
149. An interpolation series expansion for a meromorphic function, *Trans. Amer. Math. Soc.* **74** (1953), 1–9.
150. On continuity properties of derivatives of sequences of functions, *Proc. Amer. Math. Soc.* **4** (1953), 69–75.

151. (With T. S. Motzkin). On the derivative of a polynomial and Chebyshev approximation, *Proc. Amer. Math. Soc.* **4** (1953), 76–87.
152. Note on the shape of level curves of Green's function, *Duke Math. J.* **20** (1953), 611–616.
153. Note on the shape of level curves of Green's function, *Amer. Math. Monthly* **60** (1953), 671–674.
154. (With David Young). On the accuracy of the numerical solution of the Dirichlet problem by finite differences. *J. Res. Nat. Bur. Stand.* **51** (1953), 343–363.
155. An interpolation problem for harmonic functions, *Amer. J. Math.* **76** (1954), 259–272.
156. (With David Young). On the degree of convergence of solutions of difference equations to the solution of the Dirichlet problem, *J. Math. Phys.* **33** (1954), 80–93.
157. (With Philip Davis). On representations and extensions of bounded linear functionals defined on classes of analytic functions, *Trans. Amer. Math. Soc.* **76** (1954), 190–206.
158. (With J. P. Evans). Note on the distribution of zeros of extremal polynomials, *Proc. Nat. Acad. Sci. U.S.A.* **40** (1954), 332–337.
159. (With J. P. Evans). On approximation by bounded analytic functions, *Arch. Math.* **5** (1954), 191–196.
160. Sur l'approximation par fonctions analytiques bornées, *C. R. Acad. Sci. Paris* **239** (1954), 1339–1341.
161. Sur la représentation conforme des aires multiplement connexes, *C. R. Acad. Sci. Paris* **239** (1954), 1572–1574.
162. Sur la représentation conforme des aires multiplement connexes, *C. R. Acad. Sci. Paris* **239** (1954), 1756–1758.
163. (With M. Fekete). On the asymptotic behavior of polynomials with extremal properties, and of their zeros, *J. Analyse Math.* **4** (1954/55), 49–87.
164. Détermination d'une fonction analytique par ses valeurs données dans une infinie dénombrable de points, *Bull. Soc. Math. Belg.* (1954–1955), 52–70.
165. (With D. Gaier). Zur Methode der variablen Gebiete bei der Randverzerrung, *Arch. Math.* **6** (1955), 77–86.
166. (With T. S. Motzkin). Least p -th power polynomials on a real finite point set, *Trans. Amer. Math. Soc.* **78** (1955), 67–81.
167. A generalization of Jensen's theorem on the zeros of the derivative of a polynomial, *Amer. Math. Monthly* **62** (1955), 91–93.
168. (With J. P. Evans). On interpolation to a given analytic function by analytic functions of minimum norm, *Trans. Amer. Math. Soc.* **79** (1955), 158–172.
169. Sur l'approximation par fonctions rationnelles et par fonctions holomorphes bornées, *Ann. Mat. Pura Appl.* (4) **39** (1955), 267–277.
170. (With Michael Zedek). On generalized Tchebycheff polynomials, *Proc. Nat. Acad. Sci. U.S.A.* **42** (1956), 99–104.
171. (With L. Rosenfeld). On the boundary behavior of a conformal map, *Trans. Amer. Math. Soc.* **81** (1956), 49–73.
172. Best-approximation polynomials of given degree, Proc. Sixth Symposium in Applied Mathematics, Santa Monica, Aug. 1953, pp. 213–217, American Mathematical Society, Providence, RI, 1956.
173. On the conformal mapping of multiply connected regions, *Trans. Amer. Math. Soc.* **82** (1956), 128–146.
174. (With T. S. Motzkin). Least p th power polynomials on a finite point set, *Trans. Amer. Math. Soc.* **83** (1956), 371–396.
175. (With J. P. Evans). On the location of the zeros of certain orthogonal functions, *Proc. Amer. Math. Soc.* **7** (1956), 1085–1090.

176. Note on degree of approximation to analytic functions by rational functions with preassigned poles, *Proc. Nat. Acad. Sci. U.S.A.* **42** (1956), 927-930.
177. "Birkhoff, George David," article in *Encyclopedia Britannica*, 1956.
178. (With M. Fekete). On restricted infrapolynomials, *J. Analyse Math.* **5** (1956/57), 47-76.
179. (With T. S. Motzkin). Underpolynomials and infrapolynomials, *Ill. J. Math.* **1** (1957), 406-426.
180. (With T. S. Motzkin). Polynomials of best approximation on a real finite point set, *Proc. Nat. Acad. Sci. U.S.A.* **43** (1957), 845-846.
181. (With M. Fekete). Asymptotic behavior of restricted extremal polynomials and of their zeros, *Pacific J. Math.* **7** (1957), 1037-1064.
182. (With David Young). Lipschitz conditions for harmonic and discrete harmonic functions, *J. Math. Phys.* **36** (1957), 138-150.
183. On approximation by bounded analytic functions, *Trans. Amer. Math. Soc.* **87** (1958), 467-484.
184. A generalization of Faber's polynomials, *Math. Ann.* **136** (1958), 23-33.
185. "Complex numbers and complex variables," "Laplace's differential equation," and "Conformal mapping," three articles in the McGraw-Hill *Encyclopedia of Science and Technology*, 1958.
186. Approximation by bounded analytic functions, *Seminars on Analytic Functions*, Vol. II, pp. 73-87, published by U. S. Air Force, Office of Scientific Research, Washington, D.C., 1958.
187. On infrapolynomials with prescribed constant term, *J. Math. Pures Appl.* (9) **37** (1958), 295-316.
188. On Extremal Approximations, in "On Numerical Approximation," pp. 209-216, published by University of Wisconsin Press, 1959.
189. (With T. S. Motzkin). Location of zeros of infrapolynomials, *Compositio Math.* **14** (1959), 50-70.
190. Approximation on a line segment by bounded analytic functions: Problem β , *Proc. Amer. Math. Soc.* **10** (1959), 270-272.
191. Note on least-square approximation to an analytic function by polynomials, as measured by a surface integral, *Proc. Amer. Math. Soc.* **10** (1959), 273-279.
192. Approximation by bounded analytic functions: general configurations, *Proc. Amer. Math. Soc.* **10** (1959), 280-285.
193. (With T. S. Motzkin). Polynomials of best approximation on a real finite point set, *Trans. Amer. Math. Soc.* **91** (1959), 231-245.
194. (With H. G. Russell). Integrated continuity conditions and degree of approximation by polynomials or by bounded analytic functions, *Trans. Amer. Math. Soc.* **92** (1959), 355-370.
195. Note on approximation by bounded analytic functions (Problem α), *Math. Z.* **72** (1959), 47-52.
196. (With T. S. Motzkin). Polynomials of best approximation on an interval, *Proc. Nat. Acad. Sci. U.S.A.* **45** (1959), 1523-1528.
197. Note on invariance of degree of polynomial and trigonometric approximation under change of independent variable, *Proc. Nat. Acad. Sci. U.S.A.* **45** (1959), 1528-1533.
198. (With H. J. Landau). On canonical conformal maps of multiply connected regions, *Trans. Amer. Math. Soc.* **93** (1959), 81-96.
199. The analogue for maximally convergent polynomials of Jentzsch's theorem, *Duke Math. J.* **26** (1959), 605-616.
200. Solution of the Dirichlet problem for the ellipse by interpolating harmonic polynomials, *J. Math. Mech.* **9** (1960), 193-196.

201. On the asymptotic properties of extremal polynomials with prescribed constant term, *Math. Z.* **73** (1960), 339–345.
202. Note on polynomial approximation on a Jordan arc, *Proc. Nat. Acad. Sci. U.S.A.* **46** (1960), 981–983.
203. On degree of approximation by bounded harmonic functions, *J. Math. Pures Appl.* (9) **39** (1960), 201–220.
204. (With T. S. Motzkin). Best approximators within a linear family on an interval, *Proc. Nat. Acad. Sci. U.S.A.* **46** (1960), 1125–1233.
205. Degree of approximation by bounded harmonic functions, *Proc. Nat. Acad. Sci. U.S.A.* **46** (1960), 1390–1393.
206. Note on degree of approximation by bounded analytic functions: Problem β , *Trans. Amer. Math. Soc.* **96** (1960), 246–258.
207. The circles of curvature of the curves of steepest descent of Green's function, *Amer. Math. Monthly* **68** (1961), 323–329.
208. (With T. S. Motzkin). Conformal maps of small disks, *Proc. Nat. Acad. Sci. U.S.A.* **47** (1961), 1838–1843.
209. (With O. Shisha). The zeros of infrapolynomials with some prescribed coefficients, *J. Analyse Math.* **9** (1961), 111–160.
210. (With J. P. Evans). Approximation by bounded analytic functions to functions represented by Dirichlet series, *Proc. Amer. Math. Soc.* **12** (1961), 875–879.
211. A new generalization of Jensen's theorem on the zeros of the derivative of a polynomial, *Amer. Math. Monthly* **68** (1961), 978–983.
212. Degree of polynomial approximation to an analytic function as measured by a surface integral, *Proc. Nat. Acad. Sci. U.S.A.* **48** (1962), 26–32.
213. (With J. H. Ahlberg and E. N. Nilson). Best approximation properties of the spline fit, *J. Math. Mech.* **11** (1962), 225–234.
214. Asymptotic properties of polynomials with auxiliary conditions of interpolation, *Ann. Polonici Math.* **12** (1962), 17–24.
215. (With T. S. Motzkin). Polynomials of best approximation on an interval, II, *Proc. Nat. Acad. Sci. U.S.A.* **48** (1962), 1533–1537.
216. On the convexity of the ovals of lemniscates, *Studies in Mathematical Analysis and Related Topics*, pp. 419–423. Stanford University Press, Stanford, CA, 1962.
217. Approximation par les fonctions holomorphes bornées: Problème β' , *J. Math. Pures Appl.* (9) **41** (1962), 213–232.
218. (With T. S. Motzkin). Zeros of the error function for Tchebycheff approximation in a small region, *Proc. Lond. Math. Soc.* **13** (1963), 90–98.
219. Restricted infrapolynomials and trigonometric infrapolynomials, *Proc. Nat. Acad. Sci. U.S.A.* **49** (1963), 302–304.
220. A generalization of Fejér's principle concerning the zeros of extremal polynomials, *Proc. Amer. Math. Soc.* **14** (1963), 44–51.
221. A sequence of rational functions with application to approximation by bounded analytic functions, *Duke Math. J.* **30** (1963), 177–190.
222. (With O. Shisha). The zeros of infrapolynomials with prescribed values at given points, *Proc. Amer. Math. Soc.* **14** (1963), 839–844.
223. Note on the convergence of approximating rational functions of prescribed type, *Proc. Nat. Acad. Sci. U.S.A.* **50** (1963), 791–794.
224. (Book review). "Analytic Function Theory," by E. Hille, *SIAM Rev.* **5** (1963), 377–378.
225. Padé approximants as limits of rational functions of best approximation, *J. Math. Mech.* **13** (1964), 305–312.

226. (With O. Shisha). On the location of the zeros of some infrapolynomials with prescribed coefficients, *Pacific J. Math.* **14** (1964), 1103–1109.
227. (With O. Shisha). Extremal polynomials and the zeros of the derivative of a rational function, *Proc. Amer. Math. Soc.* **15** (1964), 753–758.
228. The convergence of sequences of rational functions of best approximation, *Math. Ann.* **155** (1964), 252–264.
229. A theorem of Grace on the zeros of polynomials, revisited, *Proc. Amer. Math. Soc.* **15** (1964), 354–360.
230. (With Z. Rubinstein). On the location of the zeros of a polynomial whose center of gravity is given, *J. Analyse Math.* **12** (1964), 129–142.
231. (With A. Sharma). Least squares and interpolation in roots of unity, *Pacific J. Math.* **14** (1964), 727–730.
232. Surplus free poles of approximating rational functions, *Proc. Nat. Acad. Sci. U.S.A.* **52** (1964), 896–901.
233. (With Maynard Thompson). Approximation with auxiliary conditions, *J. Math. Mech.* **13** (1964), 1015–1020.
234. Geometry of the zeros of the sums of linear functions, *Trans. Amer. Math. Soc.* **14** (1965), 30–39.
235. The location of the zeros of the derivative of a rational function, revisited, *J. Math. Pures Appl.* (9) **43** (1964), 353–370.
236. (With J. H. Ahlberg and E. N. Nilson). Fundamental properties of generalized splines, *Proc. Nat. Acad. Sci. U.S.A.* **52** (1965), 1412–1419.
237. (With J. H. Ahlberg and E. N. Nilson). Best approximation and convergence properties of higher-order spline approximations, *J. Math. Mech.* **14** (1965), 231–244.
238. (With A. Sinclair). On the degree of convergence of extremal polynomials and other extremal functions, *Trans. Amer. Math. Soc.* **115** (1965), 145–160.
239. The convergence of sequences of rational functions of best approximation, II, *Trans. Amer. Math. Soc.* **116** (1965), 227–237.
240. (With T. S. Motzkin). Mean approximation on an interval for an exponent less than one, *Trans. Amer. Math. Soc.* **122** (1966), 443–460.
241. (With J. H. Ahlberg and E. N. Nilson). Extremal, orthogonality, and convergence properties of multidimensional splines, *J. Math. Anal. Appl.* **12** (1965), 27–48.
242. (With J. H. Ahlberg and E. N. Nilson). Convergence of generalized splines, *Proc. Nat. Acad. Sci. U.S.A.* **54** (1965), 344–350.
243. Hyperbolic capacity and interpolating rational functions, *Duke Math. J.* **32** (1965), 369–380.
244. The convergence of sequences of rational functions of best approximation with some free poles, in “Approximation of Functions” (Henry L. Garabedian, Ed.), Elsevier, Amsterdam, 1965.
245. Approximation by polynomials: uniform convergence as implied by mean convergence, *Proc. Nat. Acad. Sci. U.S.A.* **55** (1966), 20–25.
246. Approximation by polynomials: uniform convergence as implied by mean convergence, II, *Proc. Nat. Acad. Sci. U.S.A.* **55** (1966), 1405–1407.
247. (With H. G. Russell). Hyperbolic capacity and interpolating rational functions, II, *Duke Math. J.* **33** (1966), 275–280.
248. The convergence of approximating rational functions of prescribed type, in “Contemporary Problems in the Theory of Analytic Functions,” (M. A. Lavrent’ev, Ed.) Proceedings, International Conference on the Theory of Analytic Functions, Erevan, 1965, Moscow, 1966, 304–308.

249. Best approximation by rational functions and by meromorphic functions with some free poles, *J. Analyse Math.* **18** (1967), 359–375.
250. On the convergence of sequences of rational functions, *SIAM J. Numer. Anal.* **4** (1967), 211–221.
251. An extension of the generalized Bernstein lemma, *Colloq. Math.* **16** (1967), 91–92.
252. (With J. H. Ahlberg and E. N. Nilson). Complex cubic splines, *Trans. Amer. Math. Soc.* **129** (1967), 391–413.
253. Approximation by polynomials: uniform convergence as implied by mean convergence. III, *Proc. Nat. Acad. Sci. U.S.A.* **56** (1966), 1406–1408.
254. Degree of approximation by rational functions and polynomials, *Michigan Math. J.* **15** (1968), 109–110.
255. Note on classes of functions defined by integrated Lipschitz conditions, *Bull. Amer. Math. Soc.* **74** (1968), 344–346.
256. (With T. S. Motzkin). A persistent local maximum of the p -th power deviation on an interval, $p < 1$. *Pacific J. Math.* **24** (1968), 143–146.
257. The convergence of sequences of rational functions of best approximation, III. *Trans. Amer. Math. Soc.* **130** (1968), 167–183.
258. Approximation by bounded analytic functions: uniform convergence as implied by mean convergence, *Trans. Amer. Math. Soc.* **130** (1968), 406–413.
259. (With J. H. Ahlberg and E. N. Nilson). Cubic splines on the real line, *J. Approximation Theory* **1** (1968), 5–10.
260. (With E. B. Saff). Extensions of D. Jackson's theorem on best complex polynomial mean approximation, *Trans. Amer. Math. Soc.* **138** (1969), 61–69.
261. Inequalities expressing degree of convergence of rational functions, *J. Approximation Theory* **2** (1969), 160–166.
262. (With J. H. Ahlberg and E. N. Nilson). Properties of analytic splines (I). Complex polynomial splines, *J. Math. Anal. Appl.* **27** (1969), 262–278.
263. Note on approximation by bounded analytic functions, Problem β : general configurations, *Aequationes Math.* **3** (1969), 160–164.
264. Approximation to a function by a polynomial in a given function, *Amer. Math. Monthly* **76** (1969), 1049–1050.
265. (With Z. Rubinstein). Extensions and some applications of the coincidence theorems, *Trans. Amer. Math. Soc.* **146** (1969), 413–427.
266. (With W. J. Schneider). On the shape of the level loci of harmonic measure, *J. Analyse Math.* **23** (1970), 441–460.
267. Approximation by rational functions: open problems, *J. Approximation Theory* **3** (1970), 236–242.
268. Note on degree of convergence of sequences of rational functions of prescribed type, *Proc. Nat. Acad. Sci. U.S.A.* **67** (1970), 1188–1191.
269. (With J. H. Ahlberg and E. N. Nilson). Complex polynomial splines on the unit circle, *J. Math. Anal. Appl.* **33** (1971), 234–257.
270. (With Dov Aharonov). Some examples in degree of approximation by rational functions, *Trans. Amer. Math. Soc.* **159** (1971), 427–444.
271. Mean approximation by polynomials on a Jordan curve, *J. Approximation Theory* **4** (1971), 263–268.
272. (With Dov Aharonov). On the convergence of rational functions of best approximation to a meromorphic function, *J. Math. Anal. Appl.*, to appear.
273. (With T. S. Motzkin). Equilibrium of inverse-distance forces in three dimensions. *Pacific J. Math.*, to appear.

BOOKS

- “Approximation by Polynomials in the Complex Domain,” *Mémoires des Sciences Mathématiques*, Gauthier-Villars, Paris, 1935, ii + 72 pp.
- “Interpolation and Approximation by Rational Functions in the Complex Domain,” *Colloquium Publications*, Vol. 20, American Mathematical Society, Providence, RI, 1935, ix + 382 pp.; 2nd edition, 1952; 3rd edition, 1960; 4th edition, 1965; 5th edition, 1969.
- “A Bibliography on Orthogonal Polynomials” (with J. A. Shohat and Einar Hille), *National Research Council, Bulletin No. 103*, Washington, D. C., 1940, ix + 204 pp.
- “The Location of Critical Points of Analytic and Harmonic Functions,” *Colloquium Publications*, Vol. 34, American Mathematical Society, Providence, RI, 1950, viii + 384 pp.
- “Approximation by Bounded Analytic Functions,” *Mémoires des Sciences Mathématiques*, Gauthier-Villars, Paris 1960, 66 pp.
- “Interpoljacija i Aproksimacija Racional’nymi Funcijami v Kompleksnoi Oblasti” (translated by A. A. Gončar and S. Ja. Havinson; Foreword by S. N. Mergeljan), *Izdat. Inostr. Lit.*, Moscow, 1961.
- “A Rigorous Treatment of Maximum–Minimum Problems in the Calculus,” pamphlet, D. C. Heath, Boston, 1962, 22 pp.
- “The Theory of Splines and Their Applications” (with J.H. Ahlberg and E.N. Nilson), Academic Press, New York and London, 1967, xi + 284 pp.